

JIG DESIGN 2

away with so-called "patch-work" in the production of machinery. It makes it possible to have all the machines built in the shop according to the drawings, a thing which is rather difficult to do if each individual machine in a large lot is built without reference to the other machines in the same lot.

The interchangeability obtained by the use of jigs and fixtures makes it also an easy matter to quickly replace broken or worn-out parts without great additional cost and trouble. When machines are built on the individual plan, it, is necessary to fit the part replacing the broken or worn-out piece, in place, involving considerable extra expense, not to mention the delay and the difficulties occasioned thereby.

As mentioned, jigs and fixtures permit the employment of practically unskilled labor. There are many operations in the building of a machine, which, if each machine were built individually, without the use of special tools, would require the work of expert machinists and toolmakers. Special tools, in the form of jigs and fixtures, permit equally good, or, in some cases, even better results to be obtained by a much cheaper class of labor, provided the jigs and fixtures are properly designed and correctly made. Another possibility for saving, particularly in the case of drill and boring jigs provided with guide bushings in this same plane, is met with in the fact that such jigs are adapted to be used in multiple-spindle drills, thereby still more increasing the rapidity with which the work may be produced. In shops where a great many duplicate parts are made, containing a number of drilled holes, multiple-spindle drills of complicated design, which may be rather expensive as regards first cost, are really cheaper, by far, than ordinary simple drill presses.

Another advantage which has been gained by the use of jigs and fixtures, and which should not be lost sight of in the enumeration of the points in favor of building machinery by the use of special tools, is that the details of a machine that, has been provided with a complete equipment of accurate* and durable jigs and fixtures can all be finished simultaneously in different departments of a large factory, without inconvenience, thus making it possible to assemble the machine at once after receiving